# An Ideal Integrating Bolometer Project

Completed Technology Project (2013 - 2014)

## Project Introduction

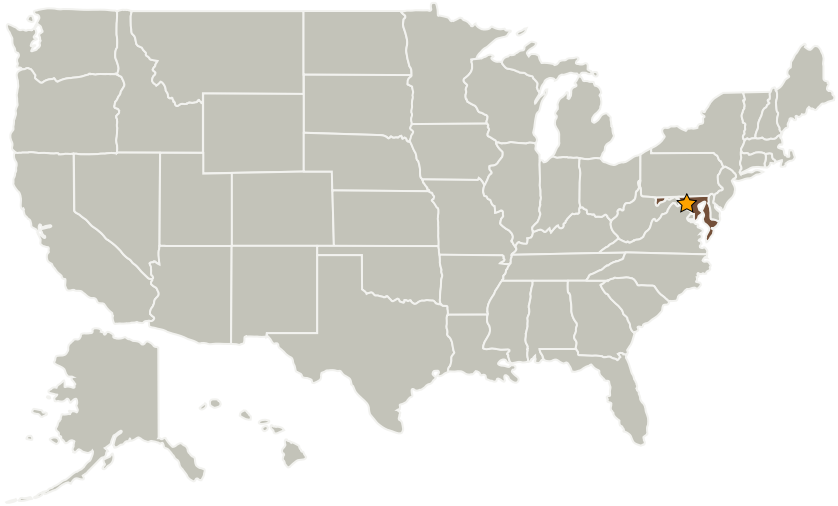
We propose to develop a novel detector to enable a new class of far-IR spectroscopic surveys. The detector, the Ideal Integrating Bolometer (IIB) is able to circumvent some of the inherent limitations on bolometers, and thus achieve dramatic improvement in sensitivity.

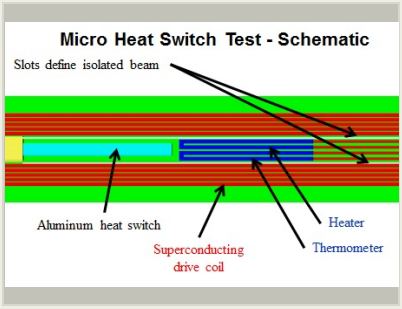
An ideal integrating bolometer can achieve breakthrough sensitivity in IR photon detection by removing practical barriers to extreme thermal isolation of the absorber. The effort will be focused on design of the IIB, with the goal of having a layout ready. During this period, we will also design parts needed for the test facility and start fabrication. In the second quarter, the IIBs will be fabricated. Also during this period, the test facility will be assembled and dry run testing completed. In the third quarter, the IIB samples will be installed in the cryostat and tested. The final quarter will be dedicated to further debugging and testing the IIB samples, and completing the final report.

## Anticipated Benefits

A superconducting heat switch will provide variable conductance for detector read-out allowing for greatly increased sensitivity.

## Primary U.S. Work Locations and Key Partners



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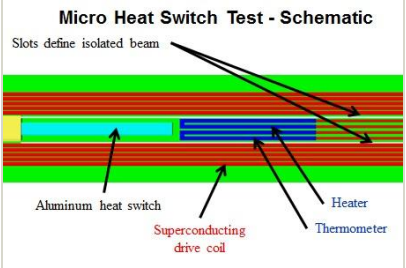
| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |

| Primary U.S. Work Locations |
|---|
| Maryland |

## Images




**An Ideal Integrating Bolometer Project**
An Ideal Integrating Bolometer Project
*(https://techport.nasa.gov/image/2988)*

## Project Website:

http://sciences.gsfc.nasa.gov/sed/

## Organizational Responsibility

**Responsible Mission Directorate:**
Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**
Goddard Space Flight Center (GSFC)

**Responsible Program:**
Center Innovation Fund: GSFC CIF

## Project Management

**Program Director:**
Michael R Lapointe

**Program Manager:**
Peter M Hughes

**Project Manager:**
Terry Doiron

**Principal Investigator:**
Edgar R Canavan

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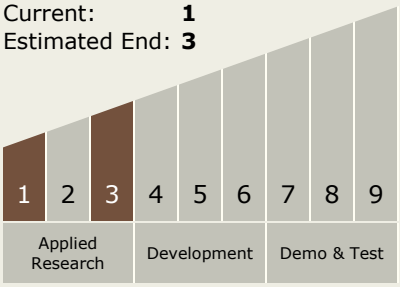
## Technology Maturity (TRL)

Start: **1**
Current: **1**
Estimated End: **3**




## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes